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Gypsum rescue?

By TIM WHITE

FARMER Rick King, who farms near Payne, has seen the results of a single gypsum application to his heavy clay soils firsthand. With help from his certified crop adviser, Joe Nester, King applied a rate of 1 ton per acre of gypsum over land that was drained by one tile line and no gypsum on land drained by another tile line.

“You could see the difference with the first rain,” King says. “It was like night and day. The tile with gypsum was as clear as drinking water. The tile without was muddy as usual.”

Nester has been recommending gypsum applications to clients for more than 20 years to improve soil structure and enhance water permeability through the soil. Gypsum is calcium sulfate — the same material used for plasterboard. Heavy clay soils can be very high in magnesium, which prevents water penetration. Adding gypsum provides sulfur to bond with magnesium, form soil aggregates, loosen the soil and promote infiltration of water.

“Sulfur is a secondary nutrient for the soil,” Nester says. “Since the Clean Air Act was passed to prevent sulfur and other pollutants in the air, the level of sulfur in Midwest soil tests has fallen off the table. We used to see 30 to 40 parts per million of sulfur in soil tests. Now we are seeing 4 to 8 parts per million. We need to put a source of sulfur out there.”

Tests like the one on King’s farm have been replicated by Ohio State University researcher Warren Dick. Dick began working with gypsum in the degraded soils of strip-mined areas 17 years ago. He found that the compound’s calcium replaced aluminum in the soil and flushed the aluminum out of the root zone to enable plants to grow.

Now his tests show that gypsum’s calcium can also bind with the dissolved phosphorus in soil and form calcium phosphate. The calcium phosphate holds P in the soil, but still makes it available to plants.

“Our results consistently show that we can reduce phos-

Key Points

- Gypsum improves soil structure and increases infiltration.
- Studies show gypsum will also hold dissolved P in the field.
- While gypsum can help reduce P in lakes, it is only one tool.



phorus leaving the field by 40% to 60%,” he says.

The findings have implications for the P runoff that has been blamed for feeding algae blooms in Lake Erie, Grand Lake St. Marys and other Ohio lakes.

“Researchers tell us if we could hold 1 pound of dissolved P per acre in place a year, we could solve the problem of phosphorus runoff,” Nester says.

Dick says gypsum should not be viewed as the total solution to P runoff. “It is the new kid on the block. It is one more tool. We still need to follow the 4 Rs [using the right source of nutrients at the right rate and right time in the right place], and we need to use cover crops. But gypsum needs to be included in more studies and considered for use where it is needed.”

Gypsoil makes inroads

Key Points

- Gypsoil from BRM is the leading supplier of gypsum for agricultural use.
- The company draws product from scrubbers of coal-fired utility plants.
- Currently, most of the gypsum scrubbed by utilities goes to landfills.

By **TIM WHITE**

LIKE Ohio Certified Crop Adviser Joe Nester and Ohio State University researcher Warren Dick, Indiana agronomist Ron Chamberlain saw the advantages of gypsum for healthier, more productive soils many years ago. Chamberlain reported that soil became “softer and more friable, yet resisted compaction, crusting and ponding.”

In 2002, Chamberlain and his wife, Cheryl, started a business and sought permits to sell gypsum for agricultural purposes in Indiana. They established the brand Gypsoil in 2006 and began working with utilities as suppliers of the product. In 2009, Beneficial Reuse Management in Chicago acquired Gypsoil. Chamberlain continues as lead agronomist.



COMMON SIGHT: Piles like this one in Illinois may be seen more frequently in Ohio as gypsum is gaining recognition for its soil-conditioning properties as well as potential to help reduce nutrient runoff.



EASY SPREAD: Gypsum is the same product used in wallboard, and manufacturing standards also create a product that meets ag’s specified and consistent standards.

Robert Spoerri is CEO of BRM and head of the Gypsoil division. He says the company has outlets in 21 states and reports that sales of the product have been doubling every year for the last four years.

“We are thinking the trend is going to continue,” he says. “Ohio is a hot spot right now. In Ohio, soils are particularly responsive to gypsum soil amendments, and additional positive data on water quality have gained a lot of attention for the use of gypsum as a tool for nutrient runoff.”

Regulatory hurdles

Gypsoil is the leading supplier of the product because it has gone through the necessary process to have the material approved by state environmental and agricultural departments, Spoerri says.

“We have the necessary footprint to market on a broad scale,” he says. “It has taken a number of years, but now we can deliver to farmers at an affordable rate.”

Most of BRM’s Gypsoil business is in the Upper Midwest, with Wisconsin the biggest user, followed by Indiana. The company has branched out to Minnesota and Iowa recently, and last year opened its first distributor in the Plains region in Kansas. The product has long been a staple in the Southeast for peanut producers.

While a small amount of gypsum is mined in Nova Scotia, Mexico and even southern Indiana and Iowa, most of the 25 million tons produced each year come from the scrubbers of coal-fired power plants. About 8 million tons is used by the wallboard industry. Their industry standards produce a product that is also well-suited for agriculture. However, more than half the gypsum from power plants is currently removed to landfills, Spoerri says.

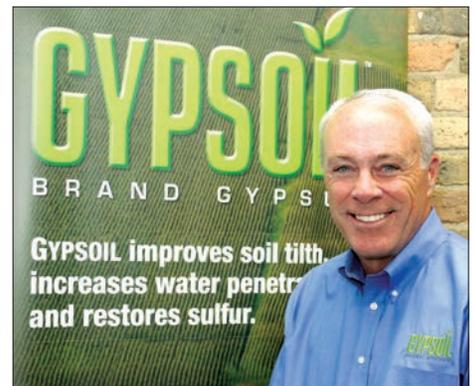
“Farmers in Colonial times knew about gypsum,” he says. “We are trying to reintroduce its use as a fundamental part of ag.”



▲ UP CLOSE:

While Gypsoil is made up of calcium sulfate and looks like lime, it does not have an impact on pH.

BRIGHT FUTURE: Robert Spoerri, CEO of BRM and head of the Gypsoil division, says sales of the product have grown from a small portion five years ago to more than half the company’s business today. ▼



Standards for using gypsum

NORM Widman, formerly with the Ohio office of the Natural Resources Conservation Service and currently the national agronomist for NRCS in Washington, D.C., sees a strong potential for gypsum. Its availability as a practice that could gain NRCS cost-sharing may be only a year away, according to Widman.

“We see much promise to utilize gypsum to reduce P runoff,” Widman responded in an email request from *Ohio Farmer*. “We are currently developing a conservation practice standard to prescribe how it can be used in buffers, on fields with high soil-test P, applied over manure in the fields, and used to promote soil aggregation (tilth). Warren Dick has helped NRCS with the drafting of the conservation practice standard. We are offering Ohio the opportunity to test the standard this year, as it takes about a year for a practice standard to go through the necessary internal and public review process.”